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Redistribution and Transmission Mechanisms of Income Inequality – Panel Analysis of the Affluent OECD Countries

Summary: The aim of this paper is to point out the limitations of conventional approaches, articulated via political processes, in reducing income inequality. Using the panel data methods, on the sample of 21 affluent OECD countries in the period from 1980 to 2011, it is observed that the increase in labour productivity as well as preferences of voters to parties that advocate greater redistribution, contrary to common perception, not necessarily lead to reduction in income inequality. Increasing dominance of big capital in the field of technological progress changes the conventions about contribution of workers to labour productivity. The result is a weakening of workers' bargaining power in relation to employers as well as increase in gap between labour productivity growth and real wage growth, which both lead to increase in income inequality. In comparison with the other political parties, it seems that the right-wing parties are more efficient in using voters' support to implement their concept of the welfare state, which contributes to maintaining the high market-generated income inequality. Such situation could be explained that de jure power of the government depends on election results, whereas de facto power depends on the support of so-called globally-oriented super elites.

Key words: Income inequality, Redistribution, Voters' preferences, Productivity.

JEL: D31, D63, D72.

Since the 1980s most of the advanced economies have been faced with the problem of increasing income inequality. Macroeconomic instability and social polarization, as consequences of the increased income inequality, are becoming particularly evident during 2008 global financial crisis. Recent OECD report shows that, excluding the mitigating effects of the welfare state *via* taxes and transfers on income, income inequality in most OECD countries has increased by more over the past three years to the end of 2010 than in the previous twelve years (Organization for Economic Cooperation and Development 2015). Income inequality in advanced economies became so evident that we could not ignore it. As a result, a large number of economists are currently occupied with the problem of increasing income inequality. Until recently, this problem was considered as an old economic problem, theoretically well explained and practically controlled by the welfare state. However, structural

changes in society, caused by prolonged and constant growth of income inequality and wealth, indicate the limitations of conventional theories as well as policies of redistribution.

In order to shed more light on redistribution and transmission mechanisms of income inequality, we try to develop and test a coherent theoretical framework that can be useful for explaining the weaknesses of transforming voters' political preferences into concrete redistributive policies in the affluent OECD countries. The key hypothesis is that increase in income inequality in the affluent economies since 1980's is primarily a consequence of the deterioration of political and economic power of workers in relation to big capital. This hypothesis is derived from the assumptions about heuristic nature of wage determination (explaining the persistent presence of income inequality) and about the emergence and spread off a new globally-oriented super elite (explaining the increase in income inequality).

1. Literature Review

A large literature has examined the causes and consequences of rising income inequality. In advanced economies, rising income inequality remains a controversial issue (see Robert J. Gordon and Ian Dew-Becker 2008; Marco D'Errico, Corrado Macchiarelli, and Roberta Serafini 2015). A different perspective to look at the rise in income inequality is the question of what are the consequences of rising income inequality and, why should we care about the widening of the income gap? (Beatrice D'Hombres, Anke Weber, and Leandro Elia 2012).

Some key factors posited as driving the increase in income inequality in advanced economies include: (i) technological progress – increasing demand for highly educated workers and decreasing demand for lowly educated workers (see David Card and John E. DiNardo 2002; Luis Garicano and Esteban Rossi-Hansberg 2005; Florence Jaumotte, Subir Lall, and Chris Papageorgiou 2013); (ii) changing social norms – it seems that society has become more apt to accept income inequality than ever before. As a result of this passiveness, we are faced with the rise of supersalaries and supermanagers (see Nada O. Eissa and Seth H. Giertz 2006; Thomas Piketty and Emmanuel Saez 2006; Steven N. Kaplan and Joshua Rauh 2010; Jon Bakija, Adam Cole, and Bradley T. Heim 2012); (iii) international capital mobility, imports and globalization – cheap low-skill imports and outsourcing reduces wages and increases unemployment for lower skilled workers (see Paul R. Krugman 2008; Almas Heshmati and Sangchoon Lee 2010; Dimitrios Asteriou, Sophia Dimelis, and Argiro Moudatsou 2014); (iv) immigration – an increase in the share of foreign born workers in the labour force and a decline in the real value of domestic workers' wage due to immigration (see Mark D. Partridge, Dan S. Rickman, and William Levernier 1996; Peri Giovanni 2007; Pia M. Orrenius and Madeline Zavodny 2007); (v) economic freedom – in the short run, policies favouring economic freedom may increase income inequality due to the redistribution benefiting the rich (see Niclas Berggren 1999; Gerald W. Scully 2002; John R. Carter 2006; Nicholas Apergis, Oguzhan Dincer, and James E. Payne 2014). In addition to these particular factors, there are also some integral approaches. Thus, Frank Levy and Peter Temin (2007) examine the widening income inequality in the United States, arguing that the income distribution is strongly shaped by a combination of factors rather than by particular factors like education, minimum wage, capital or labour mobility.

Increasing concerns about income differentiation in advanced economies led to a renewed interest in the role of institutional and political factors. Most of these theories are based on income inequality median-voter theorem developed by Thomas Romer (1975) and Allan H. Meltzer and Scott F. Richard (1981). According to the median-voter theorem, higher inequality will create pressures for redistribution. If we agree with the assumption that political power in democratic societies is more evenly distributed than economic power, then a majority of voters, expressed by the median voter, will have the power and incentive to vote for redistribution. The final result should be a reduction in income inequality. This model has two implications: (a) redistribution should rise with income inequality; (b) the redistribution effect should be greatest for the median voter. Income inequality median-voter theorem remains the subject of many critiques which question its ability to explain the sharp increase in income inequality since the 1980s in advanced economies. Thus, Branko Milanović (2000) finds support for the first claim but not the second. Namely, the gains from redistribution are largest for the poorest income deciles, rather than the middle class or median voter.

Mathias Wessel Tromborg (2014), based on the median voter theorem, developed a theoretical framework according to which major welfare state retrenchment is unlikely to occur if the median voter does oppose spending cuts. In addition, he claims that adverse effect of government debt on welfare state retrenchment will be stronger in welfare programs where the median voter is least opposed to retrenchment. Lane Kenworthy and Jonas Pontusson (2005) suggest a potential synthesis of median-voter theory and power-resource theory. The central claim of power resource theory is a view of welfare states as outcomes of, and arenas for, conflicts between class-related socioeconomic interest groups (Walter Korpi and Joakim Palme 2003). The key to the synthesis of median-voter theory and power-resource theory is the proposition that the median-voter approach to the politics of redistribution works to the extent that unions, left-wing parties, or other actors, mobilize low-income workers to participate in the political process.

Workers' participation in the political process as well as the importance of their political preferences is the subject of many controversies. It is widely accepted that left-wing parties redistribute more than right-wing parties (see Kenworthy and Pontusson 2005; Torben Iversen and David Soskice 2006). However, there are some differences between left-wing parties regarding their ability and willingness to redistribute. Exploring the effects of political parties on redistribution, Philip Keefer and Milanović (2014) identify an important new influence on redistribution: the age of left-wing parties. They argue that governments controlled by older leftwing parties redistribute less than governments controlled by younger left-wing parties. Similarly, John S. Ahlquist and Ben Ansell (2012) argue that politicians respond to widening income disparities in the most (politically) cost-effective ways, given the institutional structure in which they are embedded. Focusing on institutions, Alberto Chong and Mark Gradstein (2007) show that institutional reform may be an instrument to reduce inequality but political factors may prevent its implementation.

From historical point of view, democratization of political process shifted the balance of power toward working class and enabled workers to implement reforms leading to greater redistribution of income. In this context, Daron Acemoglu and James A. Robinson (2000) argue that the extension of voting rights, during the 19th

century, led to unprecedented redistributive programs and ensure future income redistribution from the elite to the masses. Redistribution due to democratization can be viewed as strategic decisions made by the political elite to prevent widespread social unrest and revolution. Moreover, diminishing the tendency for social and political instability, redistribution of income from the elite to the masses stimulates investment and economic growth (Alberto Alesina and Roberto Perotti 1996; François Bourguignon and Thierry Verdier 2000; Gradstein 2007). In this context, an interesting approach is proposed by Oded Galor (2011) in his “unified theory of inequality and growth” arguing that changes in economic incentives (expressed by productive cooperation between industrial elites and workers) rather than political reform was a main driver of education reform and human capital formation contributing to economic growth and reduction in income inequality.

When considering the impact of workers’ political preferences on redistribution, the special attention should be paid to the difference between *de jure* and *de facto* workers’ ability to influence redistribution *via* the political process. Joseph Stiglitz (2012) shows that the political process provides a large opportunity for workers to reduce income inequality, but it is the case only if the rich do not have more political influence than the poor. Noam Lupu and Pontusson (2011) argue that inequality matters for redistributive politics in advanced capitalist societies, but it is the structure of inequality, not the level of inequality, that matters. Acemoglu, Georgy Egorov, and Konstantin Sonin (2011) point out the role of populist politics and elites as a threat to the credibility of the redistribution process.

Daniel Horn (2011) argues that since the opinion of the poor is not taken into account in designing policies, they expect low benefits from voting and are willing to opt out of political engagement. The hypothesis about the negative relation between voter turnout and income inequality is supported by Dennis C. Mueller and Thomas Stratmann (2003), James K. Galbraith and J. Travis Hale (2008), Frederick Solt (2010). Thus, Galbraith and Hale (2008) explore the relationship between income inequality, turnout and party preferences in the USA and conclude that income inequality is significantly associated with lower voter turnout and a stronger democratic vote.

In the consulted literature, most of the applied research on income inequality is based on the methodology of panel data analysis (Partridge, Rickman, and Levernier 1996; Carter 2006; Anastasia Guscina 2006; International Monetary Fund 2007; Galbraith and Hale 2008; Engelbert Stockhammer 2013; Apergis, Oguzhan, and Payne 2014; Asteriou, Dimelis, and Moudatsou 2014; Keefer and Milanović 2014). Such an approach is understandable given the fact that most of the applied researches on income inequality include comparative analysis of several countries in longer period of time. The choice between different estimation methods depends on the nature of data as well as purposes of the study and it is common to use several methods in order to test the robustness of obtained results.

In one of the probably the most prominent mainstream analysis of the determinants of income inequality, published by International Monetary Fund (2007), the authors used fixed effects panel estimator (the 18 OECD countries for the period 1983-2002), in order to analyse the effects of globalization, changes in technology and labour market institutions on income inequality. The robustness is checked using one instrumental variable estimator. Similarly, Guscina (2006) analysed the effects of

technological change, globalization and bargaining power on income inequality (the sample of 18 OECD countries over the period 1960-2000), using a standard fixed panel estimator with country fixed effects whereas the robustness of the obtained results are checked using the model in differences without fixed effects. Stockhammer (2013), using the three panel model specifications (standard fixed effects, first difference and Generalized Method of Moments – GMM estimators), analysed the changes in wage shares as a result of technological change, financialisation, globalisation and welfare state retrenchment. The dataset covers 71 countries from 1970 to 2007. Investigating the relationship between income inequality and globalization (the EU-27 countries over the period 1995-2009), Asteriou, Dimelis, and Moudatsou (2014) perform the three most common panel data estimation methods: (1) a common constant assuming homogeneity; (2) fixed effects; and (3) random effects. In order to control potential endogeneity bias and dynamic effects, they also estimate all regression models with the GMM estimator.

2. Theoretical Framework and Hypothesis

Our theoretical framework is based on two key assumptions. First, the existence of income inequality stems from a heuristic approach in determining wage that generates a permanent gap between labour productivity growth and real wage growth for the median worker. Second, the increase in income inequality in advanced economies, starting from the 1980s, could be explained as a consequence of the emergence and spread off a new globally-oriented super elite, which weakens the welfare state and reduces the bargaining power and political weight of the workers. The term median voter is used in the context of median-income earner and decisive voter.

2.1 Heuristic Approach in Determining Wage – Conventions about Labour Productivity

The essence of the heuristic approach in determining the wage is reflected in the attitude that the wage, in circumstances where the labour market is characterized by rigidities and imperfections, can't be ascertained in a deterministic way. Accordingly, determining the wage is a non-ergodic and stochastic process in which heuristics and conventions about labour productivity play a key role. The wage is not a result of a pure technical process, but rather a social process: the wage is always socially determined.

The wage is a payment for services rendered, but what is being paid for is not always clear. Partly, the wage serves as a payment for the time spent at work and effort expended during that time. However, because of the complementarity of workers in the manufacturing process, it remains very difficult to separate the contribution of an individual worker from that of others. Moreover, part of the wage is determined from signals in terms of acquired and innate characteristics of workers. Education, knowledge, experience and skills are acquired characteristics of workers; whereas, natural intelligence, physical features and talents are innate characteristics. And finally, part of the wage depends on institutional factors such as legislation, the degree of unionisation, regulation of the economy, and customs.

Following from the role assumed by institutional factors and innate characteristics, the wage may assume characteristics of rent: part of a worker's wage is not completely determined by either current or accumulated efforts. According to neo-classical economic analysis, rent is explained as a payment to workers above the competitive labour market clearing wage. However, if we accept a view that the labour market is imperfect, then a rent, as there are no opportunity costs, is actually a transfer payment between capital owner and workers, and between the workers in different sectors and at different jobs.

As an example of determining wage as a rent, we can mention the high wages of workers in the financial sector. According to the New Earnings Survey (Office for National Statistics 2014), holding other factors constant, finance sector workers are found to earn 48% more on average than non-finance sector workers in the UK. In addition, the survey reveals that the same people doing the same job earn around 20% more when doing that job in the finance sector rather than the non-finance sector. Of course, higher wage of finance sector workers is a result of numerous factors (for example, increasing complexity of financial products that creates more asymmetric information or a high level of required human capital), but the key factor remains changes in regulation. The finance sector has gained an oligopolistic position in the market through deregulation, enabling it to raise its wages enormously when compared to other sectors of the economy.

Because of the uncertainty in the evaluation of a worker's contribution to output, the wage reflects conventions about labour productivity more than as a clear measure of the labour productivity of individual workers. Conventions about labour productivity can be defined as a prevailing opinion, stemming from the social interaction between capitalists and workers in a given institutional environment and which is used by capital owners or managers to determine the worker's wage. When compared with general conventions of economic agents, conventions about labour productivity are less normative in the sense that their contents can be changed more easily over time. As an example, consider the impact of technological progress and globalization on wages for less skilled workers. Labour that can be easily replaced by technology or cheaper labour in the global market is treated as less productive labour, regardless of its real contribution to output. The consequence is a new income differential between a small number of highly educated, well-positioned and networked elite and a large number of less specialized, less flexible, and, in every sense of the word, less networked workers.

The gap between labour productivity growth and real wage growth could happen for all workers. The reason why we focus on median worker is that median worker's income is related with the measure of income inequality and, eventually, with the level of redistribution. Namely, income inequality could be described as a result of asymmetry of social welfare function. If social welfare function is skewed to the left (average income is less than median income), income inequality is small, and *vice versa*, if average income is higher than median income (social welfare function is skewed to the right), income inequality is large. The more skewed distribution of income or, more precisely, the lower the ratio of median to mean income, leads to the higher level of income redistribution desired by a majority of voters (Karl Ove Moene and Michael Wallerstein 2003).

Labour productivity growth means that the economy generates more output from labour but it doesn't mean that median workers necessarily benefit for increased productivity. The stagnation of wage growth relative to productivity growth for median worker means that median worker has not enjoyed growth in income as fast as higher-wage workers (the effect of extreme meritocracy) or capital owners. The result is deterioration in income distribution.

2.2 Globally-Oriented Super Elite

The increased income inequality in advanced economies is linked with the emergence of new globally-oriented super elite, defined as an economically and politically dominant social class that includes capitalists, top managers and influential politicians linked by their mutual interests. It is important to emphasize that the new elite includes not only the capitalists, in terms of landowners, capital owners and credit providers, whose power is based on ownership of production factors, but also includes non-capitalist managerial and political elite that do not control production factors, but who make key decisions in corporations and government.

The global character of the new elite is reflected in the fact that their impact is not limited to the country of origin and their sources of power are not exclusively national. Globally-oriented super elite should be distinguished from the national elite; national elite derive their power from the economic, social and political status in their countries of origin. The democratization of society, development of the education system, strengthening and promotion of workers' rights imposed a series of restrictions on the national elites. In order to maintain its status, capital was forced to compromise with the government and workers. However, the reproduction of status and power for the globally-oriented super elite is increasingly less dependent on economic and political processes in the country of origin.

As a result of increased power, global capital imposes restrictions on the national state. National institutions are restructuring in order to be fully integrated into the global economy and global financial system. It seems that state activities in the economy are more concentrated on reproduction of capital, instead of class structure of society. Social compromises between capital, labour and government tends to be replaced with flexibilization and deregulation of working conditions, leading to reduction of bargaining power and political influence of trade unions.

The emergence and spread off the new elite can be illustrated by changes in income distribution in favour of the richest 1% of the population. Analysing two income databases: (i) Standardizing the World Income Inequality Database – SWIID (Solt 2014) and (ii) World Top Incomes Database (Facundo Alvaredo et al. 2016), we found that the common feature for the 21 most developed OECD countries is declining trend of participation of the richest 1% in income distribution before 1980's and its rapid growth after 1980's. These findings are consistent with our research hypothesis about the increasing influence of globally-oriented super elite on shaping redistributive policy¹. The particularly illustrative examples are: Australia, Canada,

¹ In the literature, there are a number of papers indicating the changes in income distribution in favour of the richest 1% of the population in most of the developed countries over the last three decades (for exam-

Finland, France, Germany, Italy, Japan, Portugal and Sweden. The observed trend is at least present in the case of the Netherlands.

2.3 Transmission Mechanisms of Income Inequality

From the foregoing theoretical framework, it is possible to derive three main mechanisms which aid the transfer of income from median workers to globally-oriented super elites in advanced economies: (a) weakening of the welfare state; (b) debt based economy; (c) privatization of public goods and socialization of private losses.

■ Weakening of the Welfare State

The weakening of the welfare state is performed in two ways: (1) the direct dismantling of the welfare state and *via* (2) blurring the focus of the welfare state. Globally-oriented super elite advocate the dismantling of the welfare state. An extensive and comprehensive welfare state does not correspond with the interests of the capitalists. As the welfare state represents a part of civilization heritage, the complete abolition of the welfare state is not possible. Therefore, dismantling of the welfare state manifests through replacement of redistributive mechanisms of social policy with market mechanisms of social policy.

Adjustment to increased social problems is carried out on the side of labour rather than on the side of capital. The reform of the welfare state appears in concessions made by the working class, whose income is stagnant, not in concessions made by capitalist and non-capitalist elite, whose income has risen. The explanation is that economic growth and growth in employment reduce poverty and income inequality and the key institutional mechanisms to increase production and employment are deregulation, privatization, liberalization and labour market flexibilization. The results of the application of such policies are very controversial. The liberal economic programs increased production, but real wage growth lagged behind labour productivity growth. Dismantling of the welfare state reduces the bargaining power of workers and increases the bargaining power of the capitalists, which further revise conventions about labour productivity as a starting point for determining wage. Consequently, the income gap between workers on the one hand and globally-oriented super elite on the other hand, is not reduced but rather increased.

The second way of weakening the welfare state is blurring its focus. The traditional welfare state has two primary objectives: (i) reduction of income inequality; and (ii) combating poverty. Under the pretext of striving to increase the efficiency of social spending, the problem of income inequality is replaced by the problem of absolute poverty, which conceals the growing class stratification. Moreover, it is possible to observe the change in a very concept of welfare state. The “piggy bank” function of the welfare state is becoming dominant over its “Robin Hood” function. Thus, investigating income inequality in Portugal in 2006-2009, Carlos Farinha Rodrigues and Isabel Andrade (2014) show that the redistributive effect of the “Robin Hood” function had lower efficacy and cost-efficiency.

ple: Jonathan V. Beaverstock, Philip Hubbard, and John Rennie Short 2004; Chrystia Freeland 2011; Thomas W. Volscho and Nathan J. Kelly 2012).

■ Debt Based Economy

Another mechanism through which globally-oriented super elite influence the growth of income inequality is through creation of a debt based economy. Workers, faced with growing social stratification, borrow to finance additional spending and reduce social deprivation. Increasing consumption based on debt distorts the picture of the average standard of living and provides an explanation why workers go into debt: to afford themselves a lifestyle that is the same or slightly better than a lifestyle of their friends and environment. While an increased reliance on debt to counteract stagnant wages may temporarily reduce inequality, in the long run it actually increases inequality. Repayment of private debts serves as an additional transfer of income from workers to elites.

■ Privatization of Public Goods and Socialization of Private Losses

Effective demand is associated with the income distribution. The increase in income inequality generates macroeconomic instability due to different propensities to spend and save between classes. Increasing income inequality reduces income for the class which consumes more and saves less relative to their income while increasing the income of the class for which the converse is true. The result is a decline in effective demand. In addition, the increase in income inequality creates frustration within society, contributing to political instability.

In spite of the continued trend of the rate of profit, the era beginning with the affirmation of neoliberalism produced unsustainable cycles. The outbreak of the crisis in capitalism is closely linked with appropriate levels of economic, political and/or social instability; although, these relations can also be viewed inversely, in terms of process initiation (Kosta Josifidis, Alpar Lošonc, and Novica Supić 2010). In the period of crisis, globally-oriented super elite changed institutions in order to protect themselves against losses. Socialisation of the losses of big capital is treated as a public good by the political elite who posit that it will preserve jobs and constrain macroeconomic instability. Consequently, this policy led to the institutional environment in which profits and high income of globally-oriented super elite is private, but their losses are public. As an example we can mention the crisis of 2008, during which the state covered bank losses in an attempt to promote financial stability. However, the net result was a further increase in income inequality as the state used public funds to maintain the income of the richest class.

2.4 Research Hypothesis

The key hypothesis of the paper is that increase in the income inequality in affluent economies since 1980's is a consequence of the deterioration of political and economic power of workers in relation to big capital. Workers, in democratic political systems, derive their bargaining power primarily from the political processes that allow them to change the institutional settings. According to the traditional view, the government dominated by right-wing parties promotes market solutions to economic and social problems, which leads to liberal economic and social programs. Conversely, the left-wing governments promote strong state intervention in the economy.

Regulation of the economy is considered a means to control prices and wages. In the area of social policy, left-wing parties highlight the need for greater redistribution of income, collective well-being and social cohesion.

Since the so called “second wave of neoliberalism”, after the 1990s, there is a visible trend of convergence in economic and social policies between left-wing and right-wing governments. The convergent movement can be interpreted as a strengthening of the role of globally-oriented super elites in the political processes. *De jure* power of political elites derives from the support of voters, in the sense of number of votes in elections, but their *de facto* power depends on the support of capitalist and managerial elite. In such circumstances, voter’s preferences, in terms of choice between different political options, have little effect on changes in bargaining power between workers and capitalists. Moreover, sometimes the results contradict expectations in the sense that left-wing governments contribute less to improving the position of workers in relation to the previous right-wing government. A permanent weakening of the bargaining power of the workers relative to the globally-oriented super elite, further weakens the ability of workers to ensure (via political process) the institutions and policies for improving their status and reducing income inequality.

A widening gap between *de jure* and *de facto* power of the government indicates further restrictions on the median voter theory in explaining the dynamics of the income inequality. Besides the arguments that a median party is not *per se* a ruling party, since the electoral rules could distort the proportionality of election results (see Tromborg 2014), or that party positions are not only oriented toward the preferences of the median voter, but also by constituency preferences (James F. Adams, Samuel Merrill III, and Bernard Grofman 2005), it is also possible to identify the government’s behaviour which is closer to the interests of elites, which is itself an integral part, rather than to the interest of voters with median or below median income. Since median voter is not a part of new globally-oriented super elite, their preferences are increasingly losing importance in the formation of government policy. It follows that the creation of a globally-oriented super elite strengthens the position of the government in relation to median voter, but weakened against owners and representatives of big capital.

The proof of the dichotomy between *de jure* and *de facto* power of government is an increasingly apparent difference in the behaviour of political parties before and after the elections. The pre-election behaviour is more favourable to the interests of the median voter, while the post-election behaviour reflects more the interests of big capital. As the pre-election period is shorter than the post-election period, it appears that the interests of big capital are more presented in the process of policy-making compared with the interests of median voter. Moreover, political parties after the elections often do not keep their promises made to voters during the election period, either because the promises were not binding or simply not enforceable.

If we accept the assumption that political parties are accountable to voters, then enforceable promises can be interpreted by the inability of the government to turn their *de jure* power, acquired after election, into a *de facto* power during their mandate. Consequently, it is possible to make distinction between the vote-seeking and office-seeking behaviour of political parties. In the first case, the emphasis is on coming to power, so political parties promote the ideas that are close to median voter.

In the second case, the emphasis is on maintaining power which requires the concessions to the big capital. The final result is reflected in the inability of median voter, as a majority voter, to provide, through the political process, the legislative majority necessary for the adoption of regulations and policies that ensure more equal income distribution.

3. Data and Model

The hypothesis is tested using the unbalanced panel data model. The analysis includes 21 OECD countries, which belong to different welfare state regimes: (a) Social–democratic welfare state regime – SDWR (Sweden, Denmark, Finland, Norway and the Netherlands); (b) Conservative–corporatist welfare state regime – CWS (Austria, Belgium, Germany and France); (c) Mediterranean welfare state regime – MWR (Greece, Spain, Portugal and Italy); Liberal welfare state regime – LWR (Australia, Canada, Japan, New Zealand, Switzerland, United Kingdom, Ireland and USA). The data spans the period from 1980 to 2011. Description, data source and descriptive statistics of included variables are presented in the Table 1.

Table 1 Variable Description and Summary Statistics

Name	Source	Description	Obs	Mean	Std. dev.	Min	Max
Gini after	Standardizing the World Income Inequality Database	Gini coefficient after social transfers and taxes	665	28.67	4.26	18.89	37.8
Gini before	Standardizing the World Income Inequality Database	Gini coefficient before social transfers and taxes	665	40.44	5.25	26.82	54.79
Taxes	OECD – Revenue Statistics	Income, profits and capital gains tax revenue from individuals as a percentage of GDP	656	10.69	4.67	2.7	26.3
Right	Comparative Parties Dataset (Duane Swank 2013) ²	Right party votes as a percentage of total votes	556	36.57	15.41	4.4	83
Left	Comparative Parties Dataset (Swank 2013)	Left party votes as a percentage of total votes	556	37.97	14.27	0	62
Centre	Comparative Parties Dataset (Swank 2013)	Centre party votes as a percentage of total votes	556	15.94	16.29	0	59
Legal institutions	Institutional Quality Dataset (Aljaž Kunčič 2014) ³	Legal institutional quality, relative	440	1.35	0.38	-0.10	1.93
Globalization	Comparative Political Dataset I, 1960-2012 (Klaus Armingeon et al. 2014) ⁴	Index for the degree of openness in capital account transactions	655	1.77	1.06	-1.86	2.43

² **Swank, Duane.** 2013. Comparative Political Parties Dataset: Electoral, Legislative, and Government Strength of Political Parties by Ideological Group in 21 Capitalist Democracies, 1950-2011. Electronic Database, Department of Political Science, Marquette University. http://www.marquette.edu/polisci/faculty_swank.shtml.

³ **Kunčič, Aljaž.** 2014. "Institutional Quality Dataset." *Journal of Institutional Economics*, 10(1): 135-161.

⁴ **Armingeon, Klaus, Christian Isler, Laura Knöpfel, David Weisstanner, and Sarah Engler.** 2014. Comparative Political Data Set I 1960-2013. Institute of Political Science, University of Berne.

Productivity	Penn World Tables (2015) ⁵	GDP/employment	672	56676.06	15317.15	21269.78	115135.10
Union density	Comparative Political Dataset I, 1960-2012 (Armington et al. 2014)	Net union membership as a proportion wage and salary earners in employment	664	38.11	20.32	7.6	87.4
GDP pc growth	World Development Indicators (World Bank 2014) ⁶	GDP per capita growth (annual %)	661	1.69	2.32	-8.97	10.16
Dependency ratio	World Development Indicators (World Bank 2014)	Age dependency ratio (% of working-age population)	661	50.56	3.93	43.09	70.01

Source: The authors.

In the general form, the model can be written as follows:

$$\begin{aligned} \ln(\text{Gini_after}_{it}) = & \beta_0 \text{Welfare_regimes}_{ij} + \beta_1 \text{Taxes}_{it} + \beta_2 \ln(\text{Gini_before}_{it}) + \\ & \beta_3 \text{Taxes}_{it} * \text{Gini_before}_{it} + \beta_4 \text{Politics}_{it} + \beta_5 \text{Legal_institutions}_{it} + \beta_6 \text{Politics} * \\ & \text{Legal_institutions}_{it} + \beta_7 \text{Globalisation}_{it} + \beta_8 \text{Productivity}_{it} + \\ & \beta_9 \text{Union_Density}_{it} + \beta_{10} \text{GDPPc_growth}_{it} + \beta_{11} \text{Dependency_ratio}_{it} + e_{it} \end{aligned} \quad (1)$$

$$i = 1, 2, \dots, N; j = 1, 2, 3, 4; t = 1, 2, \dots, T.$$

In the model, the dependent variable is the natural logarithm of the Gini coefficient after taxes and social transfers (Gini after) as a proxy of redistributive income inequality. The logarithmic transformation increases the likelihood that the data will have a normal distribution that affects the robustness of estimates. Explanatory variables are classified into two groups. The first group consists of the control variables: redistribution, market and political variables that affect income inequality. Redistribution is presented through taxes (Taxes). Market variables (Gini before) are presented by the natural logarithm of the Gini coefficient before taxes and social transfers as a proxy of market-generated income inequality⁷. As taxes on income and profits depends on income inequality before redistribution, we include in the model the variable indicating their interactions (Taxes*Gini_before). The last set of control variables includes political variables (Politics) expressed by right-wing (Right), left-wing (Left), centre (Centre) party votes as a percentage of total votes.

The second group of explanatory variables include: (1) welfare state regimes (Welfare regimes_{ij}) – a dummy variable taking value one if the country belongs to the one of four welfare state regimes ($j = 1, 2, 3, 4$ represent welfare state regimes SDWR, MWR, LWR and CWR); (2) the quality of legal institutions (Legal_institutions) expressed by the index which covers 9 indicators of legal institutional quality, from property rights to rule of law; (3) the variable that shows the interaction between voters' political preferences and legal institutions (Poli-

⁵ Penn World Tables. 2015. PWT 8.0. <http://www.rug.nl/research/ggdc/data/pwt/pwt-8.0> (accessed February 22, 2015).

⁶ World Bank. 2014. World Development Indicators. <http://data.worldbank.org> (accessed February 22, 2015).

⁷ In most of the empirical research of income inequality, it is common to use unemployment as a control variable. Since there is a strong positive correlation between unemployment and market-generated income inequality, we did not include unemployment as an additional variable in the model.

tics*Legal_institutions); (4) the globalization variable (Globalization) expressed by the degree of openness in capital account transactions in order to discuss the effects of globalization and capital mobility on income inequality; (5) labour productivity variable (Productivity), testing the validity of assumptions about the heuristic approach in determining wage and its impact on income inequality; (6) union density variable (Union density), to test the influence of workers' bargaining power on income inequality; (7) GDP per capita growth; and (8) age dependency ratio (Dependency ratio), to indicate the impact of economic and demographic change on the dynamics of income inequality.

4. Results

The panel data structure imposes a number of estimation issues that could lead to misleading results if they are not dealt with properly. These issues include the problem of cross sectional dependence, autocorrelation and heteroskedasticity. In addition, it is necessary to check and avoid the possible non-stationarity problem of the variables. The first step in our econometric analysis is to test for cross-sectional dependence and the presence of a unit root. In the presence of cross-sectional dependence, the conventional estimators used in panel data analysis fail to produce consistent estimates and can lead to incorrect inference (George Kapetanios, M. Hashem Pesaran, and Takashi Yamagata 2011). In addition, the panel unit root tests should be chosen with respect to the cross-sectional dependence results.

When the panel's time dimension is greater than the cross sectional dimension, the Trevor Breusch and Adrian Pagan's (1980) LM test, based on average of squares of pair-wise correlation of residuals, can be applied to test for the cross-sectional dependence in panel data. Using the Breusch and Pagan's LM test on residuals from a fixed effects model, we find evidence for cross-sectional dependence. The presence of cross-sectional dependence is expected when taking into account the fact that we analyse a group of the most advanced economies with a high degree of mutual complementarity. Interdependence and spill-over effects, indicated by the Breusch and Pagan's LM test, are particularly assumed for the EU countries. If there are free movement of labour, capital, goods and services between countries, it is realistic to expect that the changes in income inequality in one country have an impact on the dynamics of income inequality in another country. From this it follows that the problem of income inequality cannot be viewed in isolation, but must be considered in the broader context of interconnection between countries.

The presence of cross-sectional dependence between countries in our panel data narrowed the choice of the panel unit root tests to the second generation tests.

Table 2 presents Pesaran's CIPS (2007) panel unit root test allowing for cross-sectional dependence. The optimal lag is chosen using Akaike (1973) information criterion. From the Table 2 it is apparent that the variables: Productivity, Globalization, Union density, Legal institutions, Left and Centre parties exhibit a nonstationary kind of behaviour, whereas others are stationary. The non-stationary problem is solved using the first differences of variables in which it was determined the existence of a unit root.

Table 2 Results of the Pesaran CIPS Unit Root Test

Variables	Level		Fist difference	
	Stat. (Zt-bar)	Prob.	Stat. (Zt-bar)	Prob.
Gini after	-1.853	0.032	-5.918	0.000
Gini before	-2.523	0.006	-11.006	0.000
Taxes	-2.701	0.003	-15.120	0.000
Taxes*Gini before	-3.087	0.001	-14.249	0.000
Productivity	-0.209	0.417	-7.228	0.000
GDP pc growth	-9.156	0.000	-17.216	0.000
Dependency ratio	-13.004	0.000	-11.993	0.000
Globalization	2.181	0.985	-3.080	0.001
Union density	1.858	0.968	-11.641	0.000
Right	-1.659	0.049	-10.230	0.000
Legal institutions	1.738	0.959	-12.435	0.000
Left	-0.739	0.230	-3.973	0.000
Centre	-1.059	0.145	-8.060	0.000
Right*Legal institutions	-9.162	0.000	-12.933	0.000
Left*Legal institutions	-8.323	0.000	-7.578	0.000
Centre*Legal institutions	-7.027	0.000	-12.734	0.000

Note: LN denotes that a variable is in natural logarithms. Test takes nonstationarity as null. The Pesaran CIPS (2007) test is performed using the Stata "multipurt" command written by Piotr Lewandoski.

Source: Author's calculations using STATA 14 software.

Testing for first-order serial correlation in the disturbances of the model with a Wooldridge's (2002) test showed that the model suffers from the problem of autocorrelation. Additionally, the modified Wald test for groupwise heteroskedasticity confirmed that the disturbance term of the model is also heteroskedastic. The null hypotheses of no first order serial correlation and homoskedasticity were rejected at the 1% significance level. Previously, we have found out that there is also a problem of cross-sectional dependence in the panel data. In the presence of these problems, following Nathaniel Beck and Jonathan N. Katz's (1995) recommendation, the model is estimated using the Panel-corrected standard errors (PCSEs) estimator.

The PCSEs estimator assumes that the disturbances are heteroskedastic and contemporaneously correlated across panels. In our model, the observed autocorrelation is corrected by assuming AR(1) process. The problem, which remains in the PCSEs model, is how to control individual heterogeneity. The PCSEs model is actually a pooled OLS model with corrected standard error that, by its specification, ignores the panel structure of data. The F test in fixed effects model as well as Breusch and Pagan test LM test in the random effects model indicated that there are statistically significant individual effects. Instead of including dummy variable (individual effects) for each of the countries, we control the unobserved time invariant heterogeneity by the dummy variables reflect welfare state regime. The model includes all the dummies and, in turn, suppresses the intercept. As a result, the coefficients on each of the dummy variables measure the level of initial redistributive inequality in each of the four welfare state regimes, holding all the variables constant.

Table 3 Estimation Results – Voters' Preferences and Redistributive Inequality

Variables	(1) Gini after with Right	(2) Gini after with Left	(3) Gini after with Center
Taxes	0.0348*** (0.0112)	0.0293*** (0.0102)	0.0284*** (0.0103)
Gini before	0.0188*** (0.00207)	0.0172*** (0.00177)	0.0171*** (0.00178)
Taxes*Gini before	-0.000897*** (0.000263)	-0.000775*** (0.000241)	-0.000754*** (0.000242)
MWR	2.618*** (0.110)	2.672*** (0.0955)	2.677*** (0.101)
CWR	2.432*** (0.111)	2.485*** (0.0959)	2.489*** (0.101)
SDWR	2.343*** (0.106)	2.390*** (0.0914)	2.394*** (0.0971)
LWR	2.604*** (0.107)	2.663*** (0.0927)	2.667*** (0.0989)
Right	0.000674*** (0.000191)		
Legal institutions	-0.0325*** (0.0124)	-0.0117* (0.00626)	-0.0131** (0.00651)
Right*Legal institutions	0.000530** (0.000249)		
Globalization	0.00723*** (0.00277)	0.00667** (0.00301)	0.00661** (0.00303)
Productivity	0.00502 (0.0374)	0.00148 (0.0398)	-2.21e-05 (0.0397)
Union density	-0.00144 (0.00101)	-0.00164 (0.00104)	-0.00171 (0.00104)
GDP pc growth	0.000696 (0.000819)	0.000873 (0.000888)	0.000745 (0.000874)
Dependency ratio	0.00129 (0.00150)	0.00213* (0.00120)	0.00216* (0.00124)
Left		-0.000195 (0.000163)	
Left*Legal institutions		0.000118 (0.00155)	
Center			0.000330 (0.000211)
Center*Legal_institutions			-0.00399 (0.00309)
Observations	327	327	327
Number of countries	21	21	21
Breusch&Pagan's LM CSD (<i>p</i> -value)	0.0000	0.0000	0.0000
Wald heteroskedasticity (<i>p</i> -value)	0.0000	0.0000	0.0000
Wooldridge autocorrelation (<i>p</i> -value)	0.0000	0.0000	0.0000

Note: Standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Panel-corrected standard error (PCSE) estimates. Disturbances: heteroscedasticity corrected and AR(1) process.

Source: Authors' estimation using STATA 14 software.

The results of estimating specification for different voters' preferences are presented in Table 3. Specifications differ depending on which political variable in the terms of voters' preferences toward right-wing, left-wing or centre parties, is included in the model. It is evident that the voters' preferences toward the right-wing parties have resulted in an increase in income inequality (positive value of the coefficient Right) and this influence is statistically significant⁸. Also, it is evident that there is a statistically significant interaction between the right-wing parties and legal institutions (positive value of the coefficient Right*Legal_institutions), in the sense that it additionally increases existing positive influence of right-wing parties on income inequality (positive value of the coefficient Right), and reduces the impact of legislative institutions on reducing income inequality (negative value of the coefficient Legal_institutions). The voters' preferences toward the other political parties have predicted signs but they are not statistically significant. The same applies to the interaction between voters' preferences and legal institutions.

The effect of taxes on income inequality is captured by the interaction term (Taxes*Gini_before). Due to inclusion of the interaction term, the positive sign of taxes (single variable Taxes) actually does not mean that high taxes increase income inequality. Theoretically, it would only be the case if taxes on income and profits are not income sensitive, i.e. they are independent from market generated income inequality. The real effect of taxes on income inequality is described by the interaction term, which is negative and statistically significant, indicating that increases in taxes reduce income inequality for non-zero levels of market-generated income inequality.

When it comes to the institutional variables, the quality of legal institutions (Legal_institutions) reduces income inequality. The variable is statistically significant in all specifications. The institutional setting of welfare state also has a statistically significant impact on income inequality. The countries belonging to the Social-democratic welfare state regime have the lowest income inequality, followed by the countries belonging to Conservative-corporatist welfare state regime, while the highest income inequality is a feature of the countries belonging to Liberal and Mediterranean welfare state regimes. These findings are expected bearing in mind the differences in generosity and development between the welfare state regimes. The Social-democratic and Conservative-corporatist countries have the most generous and developed welfare state; the countries of the liberal model apply a residual model of the welfare state, while the Mediterranean countries are characterized by an underdeveloped welfare state in terms of mismatches between the welfare state program and their sources.

The variable indicating globalisation has the expected sign – a positive impact on income inequality in all the specifications. It could be interpreted that the capital mobility tends to increase income inequality. Similarly, the variable indicating the influence of trade union on income inequality has the expected negative sign in all

⁸ Since the dependent variable is calculated using natural logarithmic transformation, when interpreting the coefficient estimates it is necessary to perform antilogarithm conversion of the obtained estimates. In the case of variable Right (0.000674), we can say that for a fifty percent increase in share of voters to right-wing parties, we expect to see about a 3.4% increase in redistributive inequality (measured by Gini coefficient after taxes and social transfers), since $\exp(0.000674*50)-1 = 0.03427428$.

the specifications but this impact is not statistically significant. A positive relation was also found between labour productivity and income inequality. It seems that an increase in output per worker was not accompanied by lower income inequality, but on the contrary, labour productivity grows faster than worker's income, causing an increase in income inequality. However, this relation between labour productivity and income inequality is not statistically significant, which could imply that an increase in labour productivity tends not to be a mechanism for reducing income inequality in the constellation of variables included in the model. GDP pc growth is not associated with a decrease in income inequality. It means that the OECD countries are becoming richer, but inequality is also increasing with increasing wealth. However, this impact is not statistically significant in our model. As expected, the increase in the dependent population increases income inequality.

4.1 Robustness Tests

In order to check if the results are robust, the several robustness tests were performed, following the recommendation contained in: Lorraine Dearden, Howard Reed, and John Van Reenen (2006), Mikkel Barslund et al. (2007), David Roodman (2007), Jaumotte, Lall, and Papageorgiou (2013), Xun Lu and Halbert White (2014). First, we analyzed how regression coefficients estimates behave when the regression specification is changed by adding or removing regressors. Second, the robustness of the obtained results is checked by replacing the Gini coefficient on both sides of the regression equation (Gini_after and Gini_before) with its logistic transformation. Using logistic transformation of the Gini rather than the Gini itself makes this bounded variable completely unbounded. Third, robustness test was performed by excluding one country at a time from the model in order to make sure that outliers do not drive the results. Similarly, as in the previous test, in the last test we exclude one year at a time from the model in order to check if the inclusion of particular year affects the results. The results of the last two tests indicate that exclusion of particular country or year doesn't affect the results of panel analysis. The quantitative changes in the estimated coefficients are small and the key results remained the same in terms of hypothesis⁹.

In order to perform the first robustness test, the variables are divided into two groups. The first group contains the core variables which are included in all regressions and all possible combinations of other (non-core) variables. The control variables in our model are used as the core variables. The second group consists of remaining (non-core) variables that are added to, or dropped from the model as needed. The dependent variable is regressed on all possible linear combinations of the non-core variables. If coefficients are robust, it is interpreted as evidence of structural validity.

⁹ Due to the page limit, we have to omit the results of the last two robustness tests here, but they would be made available by the authors upon request.

Table 4 Robustness Test 1 – Adding or Removing Regressors

Right-wing parties					
Core var.	Sig. 5%	Sig. 10%	Perc+	Perc-	Obs.
Taxes	85	89	86	14	4096
Gini before	100	100	100	0	4096
Right	86	89	100	0	4096
Non-core var.	Sig. 5%	Sig. 10%	Perc+	Perc-	Obs.
Taxes*Gini before	100	100	0	100	2048
MWR	92	95	100	0	2048
CWR	79	81	41	59	2048
SDWR	87	88	22	78	2048
LWR	93	94	100	0	2048
Legal institutions	8	21	44	56	2048
Right*Legal institutions	16	26	0	100	2048
Globalization	6	7	83	17	2048
Productivity	0	0	68	32	2048
Union density	5	20	17	83	2048
GDP pc growth	1	6	54	46	2048
Dependency ratio	94	94	100	0	2048

Left-wing parties					
Core var.	Sig. 5%	Sig. 10%	Perc+	Perc-	Obs.
Taxes	86	88	86	14	4096
Gini before	100	100	100	0	4096
Right	0	0	23	77	4096
Non-core var.	Sig. 5%	Sig. 10%	Perc+	Perc-	Obs.
Taxes*Gini before	100	100	0	100	2048
MWR	90	91	97	3	2048
CWR	79	81	40	60	2048
SDWR	84	86	21	79	2048
LWR	94	94	100	0	2048
Legal institutions	8	35	0	100	2048
Right*Legal institutions	0	0	12	88	2048
Globalization	5	6	76	24	2048
Productivity	0	0	77	23	2048
Union density	3	18	23	77	2048
GDP pc growth	0	3	54	46	2048
Dependency ratio	94	96	100	0	2048

Centre parties					
Core var.	Sig. 5%	Sig. 10%	Perc+	Perc-	Obs.
Taxes	86	87	86	14	4096
Gini before	100	100	100	0	4096
Right	0	0	68	32	4096
Non-core var.	Sig. 5%	Sig. 10%	Perc+	Perc-	Obs.
Taxes*Gini before	100	100	0	100	2048
MWR	89	91	97	3	2048
CWR	78	81	40	60	2048
SDWR	83	86	21	79	2048
LWR	94	94	100	0	2048
Legal institutions	18	43	0	100	2048
Right*Legal institutions	0	3	1	99	2048
Globalization	5	6	76	24	2048
Productivity	0	0	74	26	2048
Union density	3	18	22	78	2048
GDP pc growth	0	2	53	47	2048
Dependency ratio	94	95	100	0	2048

Source: Author's calculations using STATA 14 software. The Robustness test is performed using the Stata "checkrob" command written by Mikkel Barslund.

The results are reported in Table 4. The first and the second columns show the share of regressions where the estimated coefficient remains significant at the 5% and 10% level. The third and the fourth columns reflect the share of regressions where the estimated coefficient has a positive and negative sign. From Table 4, it is evident that the core variables: taxes and income inequality before transfers as well as their interactions are statistically significant in all regressions. Regarding voters' preferences to different political parties, the obtained coefficient is statistically significant only in the case of the right-wing parties. None of these core variables change the sign in any combination with the non-core variables.

Regarding the non-core variables, the results are mixed. The institutional variables, indicating the quality of legal institutions and welfare state regimes have statistically significant coefficients with the expected sign in almost all of the regressions. In contrast, the variable indicating labour productivity is not statistically significant in any regression and has a positive sign in almost all of the regressions. The variable indicating globalization has an expected sign in all regressions, but coefficients are not statistically significant in most of the regressions. A statistically significant interaction between the political preferences of voters and legal institutions is presented only in the regressions that include the right-wing parties as a core variable. The variable indicating trade union has expected sign in almost all regressions but it is not statistically significant. The impact of dependent population on income inequality always has an expected, positive sign and this effect is statistically significant. Findings in relation to GDP pc growth shows almost 50%: 50% positive or negative impact of economic growth on income inequality, but this effect is not statistically significant.

Table 5 Robustness Test 2 – Logistic Transformation of Gini Coefficient

Variables	(1) Logistic Gini after with Right	(2) Logistic Gini after with Left	(3) Logistic Gini after with Centre
Taxes	-0.0141*** (0.00303)	-0.0134*** (0.00275)	-0.0132*** (0.00275)
Logistic Gini before	0.657*** (0.0708)	0.608*** (0.0612)	0.603*** (0.0615)
Taxes*Logistic Gini before	-0.0317*** (0.00890)	-0.0278*** (0.00822)	-0.0271*** (0.00828)
MWR	-0.616*** (0.109)	-0.650*** (0.0909)	-0.653*** (0.0918)
CWR	-0.882*** (0.106)	-0.917*** (0.0902)	-0.920*** (0.0909)
SDWR	-1.001*** (0.108)	-1.044*** (0.0904)	-1.047*** (0.0921)
LWR	-0.638*** (0.103)	-0.664*** (0.0875)	-0.667*** (0.0894)
Right	0.000958*** (0.000267)		
Legal institutions	-0.0454*** (0.0168)	-0.0163* (0.00874)	-0.0182** (0.00907)
Right*Legal institutions	0.000744** (0.000338)		
Globalization	0.0104*** (0.00397)	0.00951** (0.00426)	0.00944** (0.00427)
Productivity	0.00759 (0.0513)	0.00423 (0.0540)	0.00227 (0.0540)
Union density	-0.00193 (0.00141)	-0.00215 (0.00144)	-0.00224 (0.00145)
GDP pc growth	0.000978 (0.00113)	0.00117 (0.00121)	0.000996 (0.00119)
Dependency ratio	0.00174 (0.00207)	0.00291* (0.00168)	0.00296* (0.00173)
Left		-0.000256 (0.000222)	
Left*Legal institutions		0.000250 (0.00207)	
Center			0.000444 (0.000296)
Center*Legal_institutions			-0.00547 (0.00424)
Observations	327	327	327
Number of countries	21	21	21

Note: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1. Panel-corrected standard error (PCSE) estimates. Disturbances: heteroscedasticity corrected and AR(1) process.

Source: Authors' estimation using STATA 14 software.

Table 5 shows the estimates results with logistic transformations of Gini. As we can see, the coefficients estimates, in the terms of their statistical significance as well as the signs, are almost identical with the estimates in Table 3.

5. Empirical Epicentre

In the following discussion of the obtained results, the emphasis will be given to the two most controversial findings: (i) rather than reducing income inequality, increasing labour productivity seems to add to it, but this effect is not statistically significant; (ii) a statistically significant impact of voters' political preferences on income inequality is visible in the case of right-wing parties, but not in the case of the other political parties.

5.1 Labour Productivity

According to neoclassical economic analysis, wage income reflects the marginal revenue product of labour, indicating a positive relationship between real wages and labour productivity. If this assumption is correct, then growth of labour productivity increases the real wage for the median worker and thus reduces income inequality. However, strong pay/productivity linkage is not borne out by empirical examination (Mathieu Dufour and Ellen Russell 2015).

Since the 1970s in most of the developed countries, a link between the growth of labour productivity and real wage growth has been absent. According to Global Wage Report (International Labour Office 2012, in the U.S. for the period 1980-2012, hourly labour productivity in the non-farm business sector increased by around 85 per cent, while real hourly compensation increased by about 35 per cent. In Germany, labour productivity has surged by almost a quarter (22.6 per cent) over the past two decades, while real monthly wages have remained flat over the same period – indeed, between 2003 and 2011 they actually fell below the level seen in the mid-1990s. The trend of divergence between real wages and labour productivity not only contradicts the neoclassical hypotheses about the relationship between wages and labour's marginal product, but also indicates that the growth in income inequality during this period can be interpreted as a consequence of the persistent gap between labour productivity growth and real wage growth for the median worker.

How can we explain the fact that real wage followed labour productivity until 1980's, but today that it is not the case? In the literature we could find different explanation. Having investigated the divergence between median real earnings and labour productivity in Canada for the period 1980-2005, Andrew Sharpe, Jean-François Arsenault, and Peter Harrison (2008) point out four factors: (a) measurement issues associated with wages; (b) an increase in earnings inequality; (c) a decline in labour's terms of trade; and (d) a decline in labour's share of national income. According to Nir Klein (2012), the absence of a strong link between the real wage and labour productivity can be explained by macroeconomic and/or institutional factors. In addition, he makes the difference between short-term factors (such as price and wage rigidities and labour adjustment costs) and long-term factors (employment protection, entry restrictions, and market regulations). Dufour and Russell

(2015) argue that policies that were introduced to encourage productivity growth may reduce workers' bargaining power, thereby undermining workers' capacity to benefit from productivity growth. In other words, the relative bargaining power of employers and employees determine how the benefits of productivity growth are shared. Analyzing a macroeconomic panel of OECD countries between 1985 and 2007, Antonia López-Villavicencio and José Ignacio Silva (2011) find that wage increases have exceeded productivity growth for permanent workers, while the opposite is true for temporary workers, which is in line with their lower bargaining power.

In addition to the explanations above, especially those based on change in relative bargaining power between employers and employees, we would like to stress the importance of another factor – changes in social conventions about labour productivity. Namely, one of the possible explanations why labour income has increasingly lagged behind productivity growth could be a dramatic increase in the gap between technology and the workers contribution to labour productivity. Labour productivity is increasingly dependent on technology and less on workers. If labour productivity depends more on technology and less on workers, than labour productivity cannot be a factor that primarily determines wage. Unlike workers, technology can be privatized by capitalists. If technology is exogenous to a company, then bargaining power of workers relative to capitalists becomes stronger, since technological progress can be treated as a public good. However, if technology is endogenously developed by a company, it strengthens the bargaining power of capitalists relative to workers because technological progress can be treated as a private good.

Since the 1980s, in advanced economies, there has been a drastic increase in expenditure on R&D by the business sector. For example, in the U.S. until 1981 public expenditure on R&D was higher than private expenditure; during the 1980s private expenditure was equal to or slightly higher than public expenditure; but since 1989, private expenditure far exceeds the expenditures of the public sector on R&D. In 2011, 60.1% of total U.S. R&D performance was supported by business sector funding; funds from the federal government accounted for 32.3%, universities and colleges 3%, non-federal government and other non-profit organizations 4.6%. High concentration and privatization of the result of technological progress by capitalists changes the conventions about labour productivity and thus weakens the bargaining position of workers relative to capitalists. As a result, wage growth is increasingly lagging behind labour productivity growth.

The lack of a statistically significant link between the increase in labour productivity and reducing income inequality, as well as the findings about the positive correlation between productivity and income inequality, imply a need to reconsider the validity of the market approach to social policy; according to which, long-term solutions to social problems should be achieved *via* market mechanism, rather than through state intervention.

5.2 Voters' Preferences

A statistically significant relationship between voters' preferences and income inequality is only observed with the right-wing parties. It means that the right-wing parties are somehow more efficient in using voters' support to implement their concept of the welfare state in comparison with the left-wing parties.

Right-wing parties promote the concept of a welfare state as a last resort. There are two primary mechanisms for resolving social problems: labour market and family. Only if it is not possible to resolve the problems using these two mechanisms is the welfare state utilized, but even then, welfare-state intervention is limited and temporary. The welfare state is focused on the problem of poverty, usually defined in absolute terms. Reducing income inequality is not a priority of the welfare state, as redistribution could undermine incentives of economic agents. As a result, the state should refrain from intervening in the market.

Individualism and market solutions to social problems, promoted by right-wing parties, correspond to the interests of the big capital; hence, big capital prefers right-wing parties in comparison with other political options. Matching of interests between elites and right-wing parties contributes to the *de jure* political power of right-wing parties which tends to be quickly converted into *de facto* political power. A statistically significant interaction between the voters' preferences to the right-wing parties and legal institutions, which is not observed when we analyse the other parties, confirms this view. The dominance of right-wing parties increases the likelihood that the institutional framework of the welfare state will be changed in a way that will reflect the interests of elites over workers, leading to growth in income inequality.

In contrast to the right-wing parties, the left-wing parties treat social problems as a problem of the whole society rather than individuals. If social problems are the problems of the whole society, then the society is responsible for resolving the social problems. In other words, if income inequality and poverty stem from the free market, it is not realistic to expect that the free market could reduce poverty and income inequality. Instead of a reliance on the market, reducing poverty and income inequality is a responsibility of the welfare state. The welfare state, in addition to reducing absolute poverty, should have as its goal reducing income inequality. Consequently, the efforts to strengthen the welfare state, in terms of coverage and generosity of social policy as well as in institutional terms, are included in political programs of left-wing parties. Commitment to social cohesion and promoting redistributive solutions to social problems don't reflect the interests of capitalists, so big capital is less willing to support left-wing parties.

From our finding, it is evident that the voters' preferences to the left-wing parties could reduce income inequality, but due to lack of support from elites, these preferences are not expressed in reducing income inequality in reality. The lack of a statistically significant impact of the left-wing parties on income inequality is also evident in the lack of a statistically significant interaction between voters' preferences to the left-wing parties and legal institutions, which can be interpreted as a gap between *de jure* commitments and *de facto* behaviour of the left wing parties.

This explanation is related to the emerging literature on the elite control over democratic institutions and processes (for example: Eliana La Ferrara and Robert H. Bates 2001; Alessandro Lizzeri and Nicola Persico 2005; Acemoglu and Robinson 2008; Acemoglu, Davide Ticchi, and Andrea Vindigni 2011; Björn Tyrefors Hinnerich and Per Pettersson-Lidbom 2014). Thus, Acemoglu and Robinson (2008) construct the model in which the elite can capture democratic political process by

intensifying their investments in *de facto* political power, such as lobbying, to partially or fully offset their loss of *de jure* political power and maintain their favorite institutions. Hinnerich and Pettersson–Lidbom (2014) argue that, not only in representative democracy, but also in direct democracy, the elite are able to control democratic politics by exercising their *de facto* political power. Acemoglu, Ticchi, and Vindigni (2011) develop political economy model that describe how a rich elite may be able to capture democratic politics and prevent redistributive policies. An interesting implication of their model is that inequality and redistribution may be negatively correlated since higher inequality makes the capture over democratic processes more likely.

6. Conclusion

From a theoretical point of view, there are the two key assumptions about the features of income inequality in the affluent OECD countries since 1980's. First, the existence of income inequality stems from a heuristic approach in determining wage, generating a permanent gap between labour productivity growth and real wage growth for the median worker. Second, the increase in income inequality in advanced economies could be explained as a consequence of the emergence and spread off a new globally-oriented super elite, which weakens the welfare state, reducing the bargaining power and political weight of the workers. Based on these assumptions, it is possible to identify the three transmission mechanisms of income between the workers and globally-oriented super elite: (1) the weakening of the welfare state; (2) debt based economy; (3) privatization of public goods and collectivization of private losses. In the context of the possibilities to reduce income inequality, it is imperative to point out that the bargaining power of the workers, relative to the elite, derives primarily from the political processes that allow them to change the institutional settings. Since the second wave of neoliberalism, there is a visible trend of convergence in the economic and social policies between left-wing and right-wing governments, causing voter's preferences to have little effect on a change in bargaining power between workers and capitalists and consequently income inequality.

From an empirical point of view, the paper provides robust econometric findings which confirm some conventional views on income inequality, but also provoke certain dilemmas presented in the theoretical part of the paper. First, it is shown that not only is labour productivity not statistically significant in reducing income inequality as implied by neoclassical economic analysis, but also that an increase in labour productivity is accompanied by increase in income inequality in most of the affluent OECD countries. This trend could be explained by an intense concentration and privatization of technological progress by big capital which changes the conventions about labour productivity and thus dramatically weakens the bargaining power of workers. Second, it seems that the right-wing parties are more efficient in using voters' support to implement their concept of the welfare state in comparison with the left-wing parties. The possible explanation is that the economic assumptions, promoted by right-wing parties, corresponds to the interests of big capital so that the big capital prefers the right-wing parties over other political options.

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